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AMENDMENT NO. 1 APRIL 1993
TO
IS 1320 : 1988 SPECIFICATION FOR BAKER'S YEAST

(Third Revision)

(*Page* 9, *clause* F-2.1, *line* 1) — Substitute the word 'yeast' *for* 'flour'.

(*Page* 9, *clause* F-2.3, *line* 1) — Substitute '85 to 90°C' *for* '55 to 90°C'.

(FAD 15)

Reprography Unit, BIS, New Delhi, India

UDC 664·642·1
(Second Reprint SEPTEMBER 2007)
IS : 1320 - 1988
(Reaffirmed ~~2003~~) 2010

Indian Standard

SPECIFICATION FOR BAKER'S YEAST

(Third Revision)

0. Foreword — During the formulation of this standard, due consideration has been given to the Prevention of Food Adulteration Act, 1954 and the Rules framed thereunder, and the standards of Weights and Measures (Packaged Commodities) Rules, 1977. This standard is, however, subject to the restrictions imposed under these wherever applicable.

1. Scope — This standard prescribes the requirements and the methods of sampling and test for baker's yeast.

2. Types — The material shall be of the following two types:

a) Baker's yeast, compressed (BYC); and
b) Baker's yeast, dried (BYD).

3. Requirements

3.1 *Baker's Yeast, Compressed* — This shall be in the form of a block having a creamy white colour, and odour characteristic of good baker's yeast (compressed) and a fine even texture. It shall not be slimy or mouldy and shall not show any sign of deterioration or decomposition. It shall be free from extraneous materials. Starch of an edible quality may, however, be added in a quantity not exceeding 7 percent by mass on dry basis. Permissible edible binders and fillers may be added. It shall break sharply on bending.

3.2 *Baker's Yeast, Dried* — This shall be in the form of powder, small granules, pellets or flakes. It shall have an odour characteristic of good baker's yeast (dried). It shall not be mouldy and shall not show any sign of deterioration or decomposition. It shall be free from adulterants and other extraneous materials. Starch of an edible quality may, however, be added in a quantity not exceeding 10 percent by mass of the material.

3.3 Yeast shall be manufactured, packed and stored under hygienic conditions in licensed premises [*see* IS : 2491-1972 'Code for hygienic conditions for food processing units (*first revision*)']. Bacteriologically-free air filters shall be used for filtering the air for aerating the fermenters.

3.4 The material shall also comply with the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR BAKER'S YEAST
(*Clauses* 3.4, 7, G-3.5 *and* G-4.1)

Sl No.	Characteristic	Requirements for		Method of Test, Ref to	
		Bakers' Yeast Compressed	Baker's Yeast Dried	Appendix	Other Standards
i)	Moisture, percent by mass, *Max*	73	8	A	—
ii)	Dispersibility in water	To satisfy the test	To satisfy the test	B	—
iii)	Fermenting power, *Min*	1 000	350	C	—
iv)	Dough-raising capacity	To satisfy the test	To satisfy the test	D	—
v)	Bacterial flora, other than yeast, millions per gram (on dry basis), *Max*	0·75 (*see* Note)	8·0	E	—
vi)	E *Coli*	Absent (in 1·0 g)	Absent (in 1·0 g)	—	IS : 5887 (Part 1)-1976*
vii)	*Salmonella Shigella* species	Absent (in 1·0 g)	Absent (in 1·0 g)	—	IS : 5887 (Part 3)-1976†
viii)	Coliform count per g, *Max*	10	50	—	IS : 5401-1969‡
ix)	Rope spore count per g, *Max*	10	100	F	—

Note — This parameter shall be tested within 24 hours of production of yeast.

*Methods for detection of bacteria responsible for food poisoning: Part 1 Isolation, identification and enumeration of E. *coli* (*first revision*).

†Methods for detection of bacteria responsibie for food poisoning : Part 3 Isolation and identification of *salmonella* and *shigella* (*first revision*).

‡Methods for detection and determination of coliform bacteria in foodstuffs.

Adopted 18 March 1988 | © December 1988 | Gr 6

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Bakery and Confectionery Industry Sectional Committee, AFDC 31; Bakery Subcommittee, AFDC 31:1 [Ref : Doc : AFDC 31 (2913)]

4. Packing and Storage

4.1 *Baker's Yeast, Compressed* — The fresh yeast blocks shall be wrapped or packed in clean waxed paper or any other suitable food grade wrapping material or non-toxic wrappers to preserve freshness and to prevent undue deterioration during storage. The yeast blocks shall be stored at temperature between 1 to 5°C.

4.2 *Bakers's Yeast, Dried* — The dried yeast shall be packed in clean, sound and suitable air-tight containers, preferably tin containers in such a manner as to prevent the absorption of moisture and to prevent undue deterioration during storage. The yeast shall be stored in a cool and dry place at a temperature of not more than 25°C.

5. Marking — Each pack shall be suitably marked so as to give the following particulars:

a) Name of the material and trade-mark, if any;

b) Type;

c) Name and address of the manufacturer;

d) Batch or code number;

e) Net mass when packed;

f) Date of manufacture;

g) The information 'Store between 1-5°C' in case of baker's yeast, compressed. 'Keep in a cool place' and 'Replace lid when not in use' in the case of baker's yeast, dried;

h) Declaration 'Contains added starch', if starch is added; and

j) Other requirements in accordance with the Standards of Weights and Measures (Packaged Commodities) Rules, 1977.

5.1 *Standard Marking* — Details available with the Bureau of Indian Standards.

6. Sampling — Representative samples shall be drawn and conformity of the materials to the requirements of this specification shall be determined according to the procedure given in Appendix G.

7. Tests — Test shall be carried out as prescribed in **3.1**, **3.2** and the appropriate appendices specified in Table 1.

7.1 *Quality of Reagents* — Unless specified otherwise, pure chemicals shall be employed in tests and distilled water [*see* IS : 1070-1977 'Specification for water for general laboratory use (*second revision*)'] shall be used when the use of water as a reagent is intended.

Note — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

APPENDIX A

[*Table* 1, *item* (i), E-1.5.1.2, E-1.5.2.2 *and* E-2.4)

DETERMINATION OF MOISTURE

A-1. Apparatus

A-1.1 *Dish* — With a cover, made of glass or aluminium; about 25 mm in diameter.

A-1.2 *Glass Stirring Rod* — Approximately 60 mm long, with a flattened end.

A-2. Reagent

A-2.1 *Alcohol* — Ethyl alcohol or rectified spirit.

A-3. Procedure — Weigh the dish with the cover and stirring rod. Transfer to this, about 10 g of the dried yeast or 2·5 g of the compressed yeast and weigh accurately to the nearest miligram. Remove the cover of the dish and add 5 ml of alcohol. Mix thoroughly by means of the stirring rod and allow the stirring rod to remain in the weighing dish. Dry at 105±1°C for 240±2 minutes for compressed yeast and 360±2 minutes for dried yeast. Cool the dish in a desiccator and weigh.

A-4. Calculation

A-4.1 Moisture, percent by mass $= \frac{100 \times (M_1 - M_2)}{M_1 - M}$

where

M = mass, in g, of the dish;

M_1 = mass, in g, of the dish with the material before drying; and

M_2 = mass, in g, of the dish with the material after drying.

APPENDIX B

[*Table* 1, *item* (ii)]

TEST FOR DISPERSIBILITY IN WATER

B-1. Procedure — Weigh about 5 g of dried yeast or 20 g compressed yeast in a 400-ml beaker. Add to this, 50 ml of distilled water at 40 C. Leave the product undisturbed for 5 minutes. Stir for 2 minutes. Take into a one-litre graduated cylinder, 900 ml of distilled water at 40°C in the case of dried yeast and at 30°C or at ambient temperature in the case of compressed yeast. Pour the slurry from the beaker to the water in graduated cylinder. Wash the beaker with 50 ml of water and transfer the same to the cylinder and leave it for 5 minutes to find out whether any deposits are appearing. If the deposits do not settle, the material shall be considered to have passed the test.

Note — The added starch may form a sediment which may contain a few yeast cells.

APPENDIX C

[*Table* 1, *item* (iii)]

DETERMINATION OF FERMENTING POWER

C-1. Apparatus

C-1.1 The assembly of the apparatus is illustrated in Fig. 1. It consists of a flat-bottomed flask *A* of 250-ml capacity, its mouth fitted with ground-glass joint having glass delivery tube bent at right angle. It is connected to the three-way T-shaped stop-cock *B* which in turn is fitted on the 100-ml graduated tube *D* of the manometer. *E* is the manometer reservoir of 250-ml capacity. *I* is the iron stand. *D* and *E* are connected with PVC tube *F*. *G* is the water bath.

C-1.2 *Barometer*

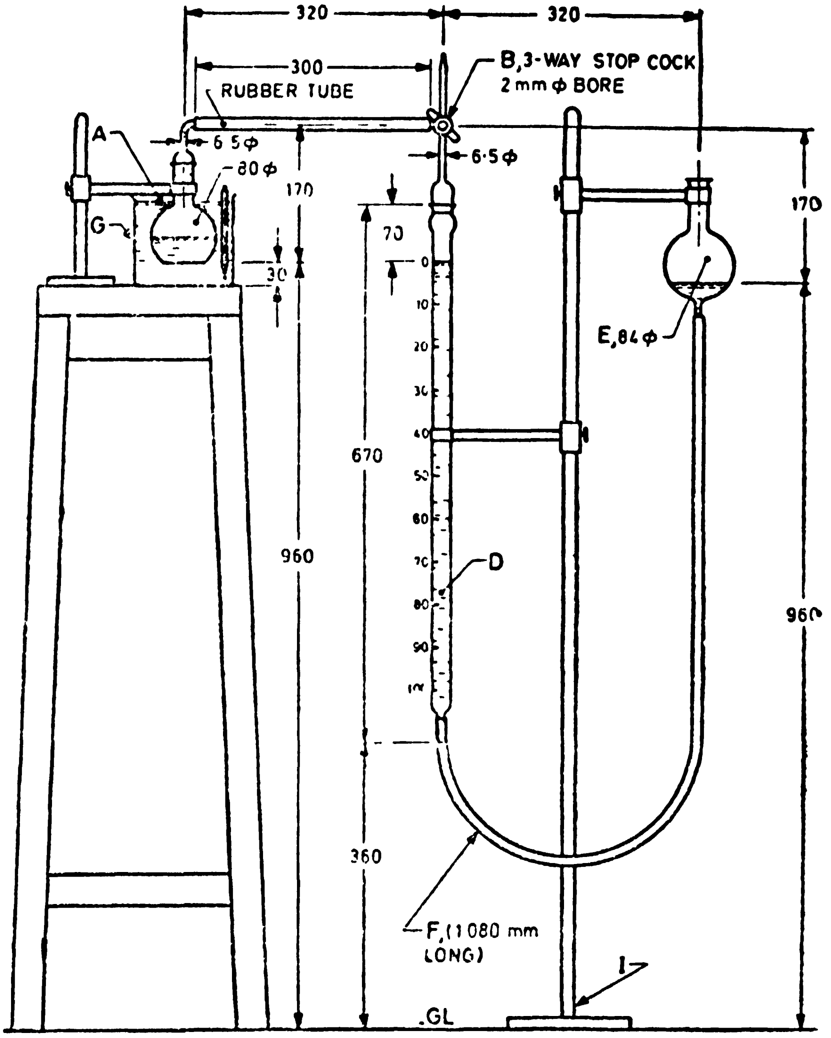
C-1.3 *Thermometer*

C-2. Reagents

C-2.1 *Sugar Phosphate Mixture* — Grind and mix thoroughly 400 g of sucrose, 25 g of diammonium hydrogen phosphate [$(NH_4)_2HPO_4$] and 25 g of dipotassium hydrogen phosphate (K_2HPO_4).

C-2.2 *Calcium Sulphate Solution* — Dilute 30 g of saturated solution of calcium sulphate ($CaSO_4 . 2H_2O$) with 70 g of water.

C-2.3 *Composition of Manometer Solution* — Weigh 200 g of anhydrous calcium chloride and 10 g of cupric chloride and dissolve in distilled water. Add a little of hydrochloric acid so that the final *p*H after making up the solution to 2 litres does not exceed 5·0.



All dimensions in millimetres.

FIG. 1 FERMENTOMETER APPARATUS

C-3. Procedure

C-3.1 Dissolve 6·75 g of the sugar phosphate mixture in 75 ml of the calcium sulphate solution in the flask. Add to it, 3·57 g of compressed yeast or 0·893 g of dried yeast. Stir well to disperse the material. Keep the flask in the water-bath at 30°C throughout the experiment. The three-way T-shaped stop-cock of the manometer is then brought to a position which shall allow the displacement of initial air (by the carbon dioxide evolved) to escape to the atmosphere without displacement of the manometer fluid. This displacement is allowed for the first 13 minutes after which the stop-cock position is altered so as to allow the carbon dioxide evolved to enter the manometer and bring about the displacement of the manometer fluid. Shake the contents of the flask every 10 minutes.

C-3.2 While taking the reading of the gas evolved, the level of the fluid in the manometer shall be adjusted by sliding the reservoir arm of the manometer and the volume of gas evolved at this pressure (which will now be equal to the atmospheric pressure) shall be recorded.

C-3.3 As soon as the reading is taken, the initial gas formed which has just been measured, is allowed to escape into the atmosphere by operating the three-way stop-cock and the stop-cock position is again adjusted to take the second reading. For compressed yeast, readings are taken every 10 minutes and for dried yeast, half-hourly readings are taken. In both the cases, readings are taken for 3 hours.

C-3.4 The room temperature and the atmospheric pressure is also noted during the course of the experiment. The readings are recorded in a tabulated form (*see* Table 2) and the total volume of

gas produced is calculated and corrected at NTP, that is, at 101 kPa pressure and 20°C temperature by the formula given in C-4.1.1.

TABLE 2 PROFORMA FOR RECORDING CARBON DIOXIDE (CO_2) EVOLVED EVERY 10 MINUTES/30 MINUTES

(*Clause* C-3.4)

Time	**Volume of CO_2 Evolved** (ml)	**Room Temperature** (°C)	**Atmospheric Pressure** (mmHg)	**Corrected Volume** (ml)
10.00 am	....	....	....	....
10.10 am	....	....	....	....
10.20 am	....	....	....	... .
10.40 am	....	....	....	....
....				
....				
....				
....				
1.00 pm	....	....	....	....
	Total Volume	Average Temp	Average Pressure	

C-4. Calculation

C-4.1 Fermenting power (corrected volume in ml) $= \dfrac{\text{Observed volume x observed average pressure x 293}}{760 \times (273 + \text{Room temperature}^{*})}$

C-4.1.1 The mass of carbon dioxide evolved may be calculated from this corrected volume by the following formula:

Mass of carbon dioxide evolved $= \dfrac{44 \times V}{22\,400}$ g, where V is the corrected volume of carbon dioxide evolved.

APPENDIX D

[*Table* 1, *item* (iv)]

DETERMINATION OF DOUGH-RAISING CAPACITY

D-1. Materials

D-1.1 *Maida* — Conforming to IS : 1009-1979 'Specification for *MAIDA* for general purposes (*second revision*)' with minimum 2 percent maltose.

D-1.2 *Sucrose*

D-2. Procedure

D-2.1 Weigh 4·000 g of baker's yeast (compressed) or 1·000 g of baker's yeast (dried) with 100 g of *maida*. Add 1·0 to 1·5 g of sucrose and a suitable quantity of water (about 55 ml is required). Knead well. Press the resulting dough into a glass beaker. Note the level of the dough by means of a scale, from the bottom of the beaker. Keep it covered for one hour at 27°C. At the end of this period, note the level again.

D-2.2 The material shall be deemed to have satisfied the test if the rise in level is at least 80 percent of the original for dried yeast and 110 percent for compressed yeast.

---

*Average room temperature.

APPENDIX E

[*Table* 1, *item* (v)]

DETERMINATION OF BACTERIAL FLORA OTHER THAN YEAST

E-0. General

E-0.1 All precautions shall be taken while opening the container throughout the test, to prevent bacterial contamination. Samples marked 'For microbiological examination' shall be used.

E-0.2 Two methods for determining bacterial flora other than yeast have been given. Method 1 is given under **E-1** and Method 2 under **E-2**. Any of the two methods may be used.

E-1. Method 1

E-1.1 *Apparatus*

E-1.1.1 *Weighing scoop sterile* — with counterweight.

E-1.1.2 *Bacteriological transfer pipettes, sterile* — accurately graduated and with a non-absorbent cotton plug in the sucking end.

E-1.1.3 *Dilution flasks, sterile* — made of heat-resistant glass.

E-1.1.4 *Petri dishes, sterile* — outside diameter 100 mm, with inside diameter 90 mm and depth 15 mm. The exterior and interior surfaces of the bottom shall be flat and free from bubbles, scratches or other defects.

E-1.1.5 *Bacteriological tubes, sterile* — of 25 ml capacity with a mark at the 10-ml level and fitted with a non-absorbent cotton plug.

E-1.2 *Reagents*

E-1.2.1 *Citric acid solution, sterile* — Prepare an approximately 10 percent (*m/v*) solution of citric acid in water and sterilize it in an autoclave at 120°C for 15 minutes.

E-1.2.2 *Dextrose-agar-medium* — having the following composition:

Peptone	20 g
Dextrose	40 g
Agar	25 g
Water, distilled	1 000 ml

E-1.2.2.1 *Preparation* — Steam the ingredients to dissolve and filter through chardin filter paper at 60°C. Sterilize this in an autoclave at 120°C for 15 minutes. Cool to about 90°C and adjust to *p*H 3·5 with the sterile citric acid solution (*see* **E-1.2.1**). Pour the medium into each of the sterile bacteriological tubes (*see* **E-1.1.5**) up to the 10-ml mark (Do not sterilize again).

E-1.2.3 *Nutrient-agar medium* — having the following composition:

Beef extract	3 g
Peptone	5 g
Agar	25 g
Water, distilled	1 000 ml

E-1.2.3.1 *Preparation* — Steam the ingredients to dissolve. Adjust to *p*H to 6·2 to 7·2. Boil the medium and filter through chardin filter paper at 60°C. Pour the medium into the bacteriological tubes up to 10-ml malk and sterilize in an autoclave at 120°C for 15 minutes.

E-1.2.4 *Ringer's solution (full strength)* — having the following composition:

Sodium chloride (NaCl)	9·0 g
Potassium chloride (KCl)	0·42 g
Calcium chloride ($CaCl_2$)	0·24 g
Sodium bicarbonate ($NaHCO_3$)	0·20 g
Water, distilled	1 000 ml

E-1.2.4.1 *Preparation* — Dissolve the ingredients and sterilize in an autoclave at 120°C for 15 minutes.

E-1.2.4.2 Dilute the Ringer's solution to four times with sterile distilled water before use.

E-1.3 *Procedure for Determining Yeast Cell Count*

E-1.3.1 *Dilution* — Prepare a dilution of the material in the Ringer's solution (*see* **E-1.2.4.2**) so that 1 ml of the diluted suspension when plated as described in **E-1.3.2** gives between 30 and 300 colonies. Add 1 ml of this dilution to the sterile petri dishes. Use at least five dilutions.

E-1.3.2 *Pouring of plates* — Melt the dextrose-agar medium in the bacteriological test-tubes (*see* **E-1.2.2.1**) and immediately cool to about 45°C (Prolonged heating at higher temperature hydrolyzes the agar and affects the gelling properties of the medium). Pour this melted medium into the petri dishes and mix by rotating and tilting the dish without splashing over the edge. Allow to solidify.

E-1.3.3 *Incubation* — Invert the petri dishes and incubate at 30°C for 3 days.

E-1.3.4 *Counting* — Count the yeast colonies with the aid of magnification under uniform and properly controlled illumination. Count only those plates with 30 to 300 colonies.

E-1.4 *Procedure for Determining Total Plate Count*

E-1.4.1 *Dilution* — Prepare a dilution of the meterial in the Ringer's solution (*see* **E-1.2.4.2**) so that 1 ml of the diluted suspension when plated as described in **E-1.4.2** gives between 30 to 300 colonies. Add 1 ml of this dilution to the sterile petri dishes. Use at least five dilutions.

E-1.4.2 *Pouring of plates* — Melt the nutrient-agar medium in the bacteriological test-tubes (*see* **E-1.2.3.1**) and immediately cool to about 45°C. Pour this melted medium into the petri dishes and mix by rotating and tilting the dish without splashing over the edge. Allow to solidify.

E-1.4.3 *Incubation* — Invert the petri dishes and incubate at 37°C for 2 days.

E-1.4.4 *Counting* — Count the colonies with the aid of magnification under uniform and properly controlled illumination. Count only those plates with 30 to 300 colonies.

E-1.5 *Calculation*

E-1.5.1 *Calculation for yeast cell count*

E-1.5.1.1 Complete the average yeast cell count per gram from the dilutions used.

E-1.5.1.2 Yeast cell count per gram (on dry basis), $Y_c = \frac{100 \times C_w}{100 - M}$

where

C_w = average yeast cell count per gram (*see* **E-1.5.1.1**); and

M = moisture, percent by mass, as determined in Appendix A.

E-1.5.2 *Calculation for bacterial flora other than yeasts*

E-1.5.2.1 Complete the average total plate count per gram from the dilutions used.

E-1.5.2.2 Total plate count per gram (on dry basis), $T_c = \frac{100 \times T_w}{100 - M}$

where

T_w=average total plate count per gram (*see* E-1.5.2.1); and

M=moisture, percent by mass, as determined in Appendix A.

E-1.5.2.3 Bacterial flora, other than yeasts, count per gram (on dry basis) $= T_c - Y_c$.

E-2. Method 2

E-2.0 *Principle* — The growth of yeast cells is inhibited by additions of chemicals such as nystatin or cycloheximide (actidione), and the material in a suitable medium is incubated at 37°C for 48 hours. The bacterial flora other than yeast is then counted.

E-2.1 *Apparatus* — Same as given from E-1.1.1 to E-1.1.5.

E-2.2 *Reagents*

E-2.2.1 *Nystatin or cycloheximide (actidione) solution* — 0·22 percent (*m/v*), sterilized at 35 kPa for 20 minutes.

E-2.2.2 *Yeast suspension (m/v basis)* — dilution 10^{-2} to 10^{-6}.

E-2.2.3 *Nutrient agar and yeast extract medium*

E-2.2.3.1 *Nutrient agar*

Bacto beef extract	3·0 g
Bacto peptone	5·0 g
Sodium chloride	8·0 g
Bacto agar	15·0 g
Distilled water	1 000 ml
*p*H	7·0

E-2.2.3.2 Suspend nutrient agar in water (23 g/litre of water) and add 10 g of yeast extract. Heat in the boiling water bath to dissolve. Dispense the agar (12 ml) while hot into test tubes and cover with oxoid caps. Sterilize by autoclaving at 100 kPa for 15 minutes.

E-2.3 *Procedure*

E-2.3.1 In each petri dish, first pour 1 ml of nystatin or cycloheximide solution (0·12 percent, *m/v*), then pour 1 ml of the appropriate dilution of yeast suspension and finally one tube of nutrient agar medium (E-2.2.3.1) at a temperature of 45 to 48°C and mix by rotating and tilting the dishes without splashing over the edge. Allow to solidify.

E-2.3.2 When set, invert the petri dishes and incubate for 48 hours at 37°C.

E-2.3.3 Count each colony and multiply the total by the appropriate dilution used.

E-2.3.4 Compute average count per gram of bacterial flora other than yeast (N).

E-2.4 *Calculation*

$$\text{Bacterial flora other than yeast, per gram (on dry basis)} = \frac{100 \times N}{100 - M}$$

where

N=average count per gram of bacterial flora other than yeast; and

M=moisture, percent by mass, as determined in Appendix A.

APPENDIX F

[*Table* 1, *item* (ix)]

DETERMINATION OF BACTERIAL ROPE SPORE COUNT

F-1. Reagents

F-1.1 *Peptone Water* — 0·1 percent, sterilized.

F-1.2 *Tryptone Glucose Extract* (*TGE*) *Agar*

Tryptone	5·0 g	Agar, bacteriological grade (*see* Note)	15·0 g
Yeast extract	2·5 g	Water, distilled	1 000·0 ml
Glucose (dextrose)	1·0 g	Final *p*H	7·0±0·1
Sodium chloride	6·5 g		

Note — Granulated or chopped shreds, practically free from thermophilic bacteria shall be used.

F-2. Procedure

F-2.1 Weigh 22 g of flour in a suitable sterile container and transfer to 100 ml of sterile 0·1 percent peptone water in a conical flask containing sterile sand or glass beads. Disperse by blending on a shaker for about two minutes. Dilute the blended material further 1:10, 1:100, 1:1 000, 1:10 000, etc, by dilution technique, using sterile peptone water.

F-2.2 Prepare tryptone glucose extract (TGE) agar or any other suitable medium 100 ml per 250 ml conical flask. Prepare one additional flask of medium to serve as sterility control. Sterilize at 121°C for 15 minutes and then cool to 45°C in a water-bath. Pipette volumes of blended material into a set of flasks of TGE agar while they are held in the water-bath-10 ml into the first, 1 ml into the second and 1 ml of each dilution into the third, fourth and fifth TGE flask and so on. Gently agitate the flask to disperse the blended material throughout the medium.

F-2.3 Transfer the flasks without delay to a water-bath adjusted to 55 to 90°C and hold for 30 minutes with gentle shaking occasionally to assist heat distribution. After 30 minutes of heat treatment, cool the flasks to about 45°C without allowing the agar to congeal. Pour 100 ml medium in each flask representing the material and sterility control into a set of 5 sterile petri dishes in approximately equal volumes that is about 20 ml per plate. When agar has solidified, invert the plates and incubate at 35°C for 48 hours.

F-2.4 Count the surface and sub-surface colonies. The sum of the colonies on the set of 5 plates poured from TGE agar, containing 10 ml of blended food material represents the number of aerobic and mesophillic spores per gram of the material. Similarly, 1 ml of the blended and 1 ml of each dilution are equal to 0·01, 0·001, 0·000 1 and 0·000 01 of the number of spores per gram and shall be multiplied by the respective dilution factor. Generally, the set of plates showing about 30-60 colonies per plate are to be chosen for the counting purposes.

F-3. Precautions and Limitations

F-3.1 The procedures permits enumeration of aerobic and mesophillic spores in food samples containing relatively higher number of spores by higher dilution of the samples prior to heat treatment.

F-3.1.1 Certain thermophillic strains may also be indicated in this method in which case a separate enumeration method for thermophiles may be adopted and their numbers subtracted from the spore count.

APPENDIX G

(*Clause* 6)

SAMPLING OF BAKER'S YEAST

G-1. General Requirements of Sampling

G-1.0 In drawing, preparing, storing and handling samples, the following precautions and directions shall be observed.

G-1.1 The sampling instrument shall be clean and dry when used. When taking samples for microbiological examination, the sampling instrument shall be sterile.

G-1.2 Precautions shall be taken to protect the samples, the materials being sampled, the sampling instruments and the containers for samples, from adventitious contamination, such as damp air, dust or soot.

G-1.3 The samples shall be placed in clean and dry glass containers. The sample containers shall be of such a size that they are almost completely filled by the sample. The sample container shall, in addition, be sterile when they are used for storing samples for microbiological examination.

G-1.4 Each container shall be sealed air-tight after filling and marked with full details of sampling, batch number, name of the manufacturer and other important particulars of the consignment.

G-1.5 Compressed yeast samples shall be refrigerated immediately at a temperature between 1-5°C and shall be tested within 24 hours. Dried yeast shall be refrigerated immediately and tested within 48 hours.

G-1.6 Sampling shall be done by a person agreed to between the purchaser and the vendor and in the presence of the purchaser (or his representative) and the vendor (or his representative).

G-2. Scale of Sampling

G-2.1 *Lot* — All the containers in a single consignment of the material of same type and drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared to consist of different batches of manufacture, containers of the same batch shall be separated and shall constitute separate lots.

G-2.2 For ascertaining the conformity of material to the requirements of this specification, samples shall be tested from each lot separately.

G-2.3 The number of containers to be selected from the lot shall depend on the size of the lot and shall be according to Tables 3 and 4.

TABLE 3 SCALE OF SAMPLING FOR BAKER'S YEAST, COMPRESSED

Number of Packets in the Lot	Sample Size
Up to 50	2
51 to 100	3
101 to 150	5
151 to 300	7
301 and above	10

TABLE 4 SCALE OF SAMPLING FOR BAKER'S YEAST, DRIED

For Containers of Less than 100 g		For Containers of 100 g to 1 kg		For Containers (Tins) of 15 kg	
Lot Size	Sample Size	Lot Size	Sample Size	Lot Size	Sample Size
Up to 100	5	Up to 50	2	Up to 50	2
101 to 300	7	51 to 150	3	51 to 150	3
301 and above	10	151 to 300	5	151 and above	4
		301 and above	7		

G-2.3.1 In case of compressed yeast, if packets are packed in cartons, 25 percent of the cartons subject to the minimum of two shall be selected and approximately equal number of packets shall be selected from each carton. In case the cartons are packed in wooden boxes, at least 25 percent of the wooden boxes subject to the minimum of two shall be selected and one carton from each such wooden box shall be selected. In order to obtain the requisite sample size according to Table 3, approximately equal number of packets shall be taken from each carton.

G-2.3.2 In case of dried yeast, if containers are packed in wooden boxes, at least 25 percent of the wooden boxes subject to the minimum of two shall be selected and approximately equal number of containers selected from each wooden box.

G-2.3.3 The containers from the cartons/wooden boxes and cartons from wooden boxes shall be selected at random from the lot. In order to ensure the randomness of selection, procedures given in IS : 4905-1968 'Methods for random sampling' may be followed.

G-3. Test Samples and Referee Samples

G-3.1 *Preparation of Sample for Microbiological Examination* — In order to draw a representative samples from each container selected (*see* **G-2.3**) take small portions of the material from a container with an appropriate sampling instrument which is sterile and mix them thoroughly under aseptic conditions. The quantity of material in the sample shall not be less than 100 g. Divide the sample (taking care not to bring in microbiological contamination in the material) into three equal parts; each part shall form a reduced sample for that container. A set of such reduced samples, consisting of one reduced sample for each container, shall constitute the test sample. Three sete of these test samples, each being not less than 25 g, shall be transferred to sterile glass containers, sealed air-tight and labelled with particulars given in **G-1.4**. They shall be marked, in addition, with the words 'For Microbiological Examination'.

G-3.2 *Preparation of Sample for Other Tests* — Draw from the portion remaining after taking sample of microbiological examination from each container in the sample (*see* **G-3.1**), at least 400 g of the material and mix thoroughly so as to form a representative sample for that container. Divide this into three equal portions. Each portion, not being less than 100 g, shall be transferred to a clean dry container made of glass or tinplate and labelled with the particulars given in **G-1.4**. Three sets of test samples shall be prepared (*see* **G-3.1**) and in addition, be marked with the words 'For tests other than microbiological'.

G-3.3 *Sample for Purchaser and Vendor* — A set of test samples, consisting of two reduced samples namely one marked 'For microbiological examination' and the other 'For tests other than microbiological', for each container in the sample, shall be sent both to the purchaser and the vendor.

G-3.4 *Referee Sample* — The third set of test samples, consisting of the two reduced samples, namely one marked 'For microbiological examination' and the other 'For tests other than microbiological', bearing the seals of the purchaser and the vendor, shall constitute the referee sample to be used in case of a dispute between the purchaser and the vendor.

G-3.5 The samples labelled with words 'For microbiological examination' shall be used for determination of the bacterial flora, other than yeast [*see* item (v), Table 1].

G-3.6 The samples labelled with words 'For tests other than microbiological', shall be used for all other tests.

G-4. Number of Tests and Criteria for Conformity

G-4.1 All the characteristics given in Table 1 except microbiological requirements shall be tested on individual samples.

G-4.2 Microbiological requirements shall be tested on individual samples labelled with the words 'For microbiological examination'.

G-4.3 The lot shall be declared as conforming to the requirements of this specification if all the individual test results according to **G-4.1** and **G-4.2** meet the relevant specification requirements.

EXPLANATORY NOTE

Baker's yeast is used for the leavening of baked goods. It consists of *Saccharomyces cerevisiae* and related species. In the trade, it is available either in the compressed or in the dried form. In the compressed form, if stored between 1-5°C, compressed yeast retains its activity for about ten days after the date of manufacture and active dry yeast will keep its activity up to three months if kept at 5°C.

This standard was initially published in 1958 and subsequently revised in 1972. In the revised version, more accurate methods for determination of fermenting power and dispersibility were incorporated based on a series of investigations at various laboratories. The requirement for yeast cell count was deleted and the requirement for micro-flora other than yeast was changed to bacterial flora other than yeast and an alternate method for determination of this requirement was incorporated. The standard was further revised in 1981 wherein the packing clause and sampling plan had been modified.

In this revision, a number of changes have been incorporated which include raising the limit for minimum fermenting power of compressed yeast from 900 to 1 000 inclusion of conditions for storage, inclusion of requirements for absence of *Salmonella Shigella Species* and E *coli*, and laying down limits for rope spore count, amending the requirement for bacterial flora other than yeast for compressed yeast and laying a time limit of 24 hours from production for determining this requirement.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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